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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/640,204	08/16/2000	Andrew C. Singer	1201.63069	3214

7590 07/15/2003

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EXAMINER

CORRIELUS, JEAN B

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/640,204

Applicant(s)

SINGER ET AL.



Examiner

Jean B Corrielus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 7-12 is/are rejected.
- 7) ☒ Claim(s) 2,5,6,13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4 and 5</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: : what does it means by “a set priors over symbol values”, recited troughout the specification?

Appropriate correction is required.

Claim Objections

2. Claims 1-14 are objected to because of the following informalities: what does it means by “a set priors over symbol values” recited in claims 1-14. Claim 2, line 2, “criterion” is mistyped as “crieterion”. Claim 2, Should “statistics of“ be deleted in both occurrences to be consistent with the specification page 10, line 25-page 11, line 1? The terms “SISO” and “MMSE”, recited in the claims, need to be expanded. Claim 12, shouldn’t “the output distribution” be “the transmitted symbols” to be consistent with claim 11, lines 4-5? Claim 12, lines 2-3, what does it means by “and didtributed about the symbol values”?Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to

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which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 7, 8 and 10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The further limitations recited in both claims 7 and 8, are not enabled because the specification how to configure the equalizer in order to implement the fast update of order M to the power of 2. Without that information one will not be able to make/or use the invention as claimed.

As per claim 10, the imitations recited in claim 10, lines 16-18 do not have support in the specification.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation recited in claim 4, lines 2-4, is unclear more specifically the rest of the sentence after decoder in line 4, does not seem to follow the logic of the previous sentences.

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Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3, 4, 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah US patent No. 6,263,030.

Khayrallah discloses a method and apparatus fig. 3 having a SISO equalizer 74 having an input for receiving data 72 from a noisy channel 70; inputting a set of prior symbol values on line 98 to said equalizer 74; equalizing in the SISO equalizer the data received over the noisy channel and the set of prior symbol values to produce a symbol value estimate; using the Viterbi decoder 78 to decode (mapping) the equalizer output onto the prior symbol values to produce a confidence indication in each of the symbol value estimate as a function of time. However, Khayrallah does not explicitly teach the use of MMSE algorithm. The use of such an algorithm is old and well known in the art. Given that one skill in the art would have been able to use such an algorithm in Khayrallah so as to take advantage of its simple adaptive implementation.

As per claim 3, Khayrallah further teaches an error correction decoder (see fig. 4) configured to receive the output of the equalizer 84 and using the output of the error correction and the prior symbol values and the process is repeated iteratively.

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As per claim 4, the data is interleaved prior to transmission and the output of the equalizer 84 is deinterleaved after error correction. However, interleaving prior to error correction would have been in the perview of one skill in the art as it would have reduce the complexity of the interleaver.

As per claim 9, the output of the equalizer is deinterleaved in deserialser 76 and the decoder 78 is configured to decode the deinterleaved data and said process is repated iteratively.

As per claim 12 it would have been obvious to one skill in the art to decode (map) the estimates by treating the output distribution as conditionally gaussian and distributed about the symbol values so as to increase system reliability.

Allowable Subject Matter

9. Claims 2, 5, 6, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

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or faxed to:

(703) 872-9314

(for informal or draft communications, please label "PROPOSED" or
"DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

11. Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Jean B. Corrielus whose telephone number is (703) 305-4023.
The examiner can normally be reached on Monday-Thursday from 7:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Chi Pham, can be reached on (703) 305-4378.

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Group receptionist whose telephone number is (703) 305-3800.


Jean B. Corrielus

Primary Examiner

TC-2600 7/9/03